KB6600 Series
Programmable Keyboard
User's Manual

Rev. Original

FCC Notes:

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with limits for a Class A digital device pursuant to subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures to correct the interference.

Warranty Limits:

Warranty will terminate automatically when the machine is opened by any person other than the authorized technicians. The user should consult his/her dealer for the problem happened. Warranty voids if the user does not follow the instructions in application of this merchandise. The manufacturer is by no means responsible for any damage or hazard caused by improper application.

About This Manual:

This manual is written in an attempt with full strength to assist the user to utilize the powerful programmable keyboard KB6600 series which consists of a 6 positioned electronic control key and 84 press keys which provides excellent tactile click when pressed, and an optional magnetic stripe reader for ISO standards. The KB6600 not only is capable of being programmed to transmit whatever code a standard PC or PS2 keyboard can deliver, but also provides a great variety of programmability such that contains all capabilities of the most modern programmable keyboards.

The manufacturer of this product heartily apologizes to the user for reserving the right to change or to modify this manual without notice due to the rapid and constant progress and improvement on science and technology.

The information in this manual contains only essential hardware concerns for general user and is subject to change without notice. Posiflex reserves the right to alter product designs, layouts or drivers without notification. The system integrator shall provide applicative notices and arrangement for special options utilizing this product. The user may find the most up to date information of the hardware from web sites: http://www.posiflex.com or http://www.posiflex.com.tw

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I. OVERVIEW

A. SCOPE

The KB6600 series is a series of powerful programmable keyboard suitable for application in PC compatible system, programmable without TSR under DOS, Win98/2000, Win XP embedded and Win XP Pro environment. This series provides 84 keys (max.) of a comfortable size 19 x 19 mm in 6 x 15 matrix within which a 4 x 4 numerical keypad resides and a 6 position control key which is capable of sending answer back codes according to the position of the key.

B. FEATURES

1) Powerful programming ability (hot key programming, programming under DOS, off-line programming under DOS, programming under Windows, multiple page, multiple level, whole range key content, time delay, position sense answer back code, etc.)
2) True spill proof structure
3) Reliable and pleasant key click
4) Comfortable key size
5) Optional blank key, double key for alternative key group layout
6) Optional MSR (Magnetic Stripe Reader)

C. MODEL NUMBERS

MODEL #	DESCRIPTION
KB6600	Standard model (8 KB non-volatile memory)
KB6600M2	Keyboard with 2 tracks ISO7811 MSR (tracks 1 & 2)
KB6600M2/3	Keyboard with 2 tracks ISO7811 MSR (tracks 2 & 3)
KB6600M3	Keyboard with 3 tracks ISO7811 MSR (tracks 1, 2 & 3)
KB6600MJ	Keyboard with 2 tracks JIS II MSR (JIS I track 2 & JIS II)

II. PACKAGE CONTENTS

1) Programmable keyboard
2) Key clip x 1 (mounted at bottom of the programmable keyboard)
3) Accessory bag including:
   - Interface cable CCBLA-055-1 for PS2 KB port x 1
   - Legend sheet x 4
   - Control keys 4 pcs/set x 1 (set)

- Posiflex product information CD x 1
- User's manual x 1
- Key cap (for single key) x 68

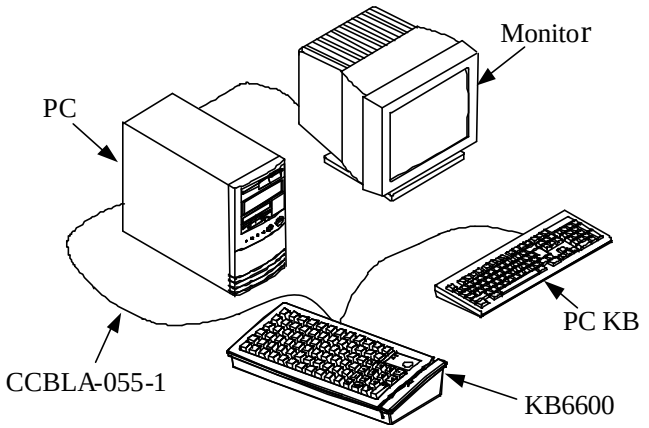
A. OPTION LIST

1) MSR (ISO track 1 & 2, ISO track 2 & 3, ISO track 1, 2 & 3, or JIS I track 2 + JIS II) /pc
2) Double key with key cap / set
3) Blank key / pc
4) Single key top and key cap / set

III. INSTALLATION

A. CABLE CONNECTION

For installation in a PS2 or a compatible system with KB6600 connect the 6 pin DIN male plug of cable CCBLA-055-1 out of the accessory bag to the 6 pin DIN female connector at the left of the bottom of the programmable keyboard. Connect the mini DIN 6 male plug of the cable to the PS2 or a compatible system. Connect the PS2 keyboard or other PS2 keyboard wedged device like a CCD scanner to the 6 pin mini DIN female connector at the bottom of the programmable keyboard if required.



B. KEYTOP LAYOUT

The basic layout of this programmable keyboard is a matrix with 6 rows and 15 columns to provide maximum 84 positions for push keys with a 6 position control key and LED indicators. Within these 84 positions there is four by four matrix below the control key area configured as numerical keypad.

This numerical keypad is a set of “numerical keys” which is composed of 12 numerical keys each is preprinted with one from the set of “0”, “00”, “.”, “1”, “2”, “3”, “4”, “5”, “6”, “7”, “8” and “9” plus “-“, “+” and a double size “Enter” key (ref. Fig. 3-6). However, there are means for the user to break the monotony and to improve the efficiency in application of this programmable keyboard.

First of all, there are 4 legend sheets of different colors in the accessory bag that the user may want to print the identification for each programmed key into each cell of the sticker matrix and then stick each cell printed with the identification onto the surface of the corresponding key top. A key cap from the accessory bag can be snapped on the key top to protect the sticker (ref. Fig. 3-2). In this way the user may feel a lot easier in using the programmable keyboard.

At the bottom of the programmable keyboard, the user may find an adjustable key clip which can be used to pick up the key cap whenever required (ref. Fig. 3-2). The two “feet” of the key clip should be pulled wide for use with double key (ref. Fig. 3-3). It is advisable to use a flattop (minus sign) screw driver to help getting the key top off when necessary (ref. Fig. 3-2 and 3-3).

Whenever there comes the need to install a key top onto the programmable keyboard, the user should notice that at the bottom of each key top, one of the four walls is springy and in the hole on the keyboard to accept the bottom of the key top there is a protuberance at the lower side. The user should match the springy wall of key top against the protuberance in the hole (ref. Fig. 3-4) and press the key top down till a click sound is heard. The key cap (except the blank key) should be placed after the printed label is stuck onto the key top.

Furthermore, there are blank keys available which the user can use to form visible partitions or clusters of key tops on the programmable keyboard. When the user wants to make a group of keys on the programmable keyboard clearly separated from the rest part of the keyboard for certain specific application, he/she can use the blank keys to replace the normal individual keys around the area. The top surface of a blank key is at the ground level of the key stroke for other keys (ref. Fig. 3-6). The blank key will not be pressed down when pressed. The user may order for accessional quantity of the blank keys as option for his/her application.

There are also double key available for the user to configure the programmable keyboard such that the most frequently used keys may occupy larger areas. The double key occupies two adjacent positions and uses only the bottom position for key content (ref. Fig. 3-3). An example of using the above mentioned alternate key tops is shown in Fig. 3-6

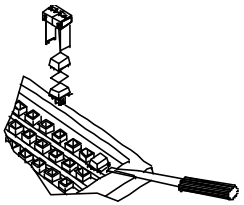


Fig. 3-2

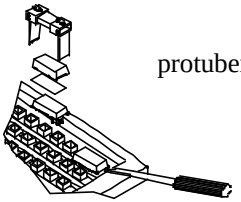


Fig. 3-3

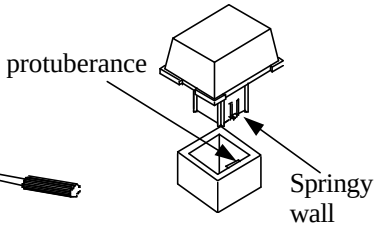
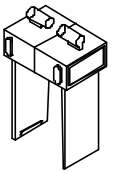


Fig. 3-4



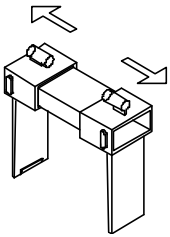


Fig. 3-5

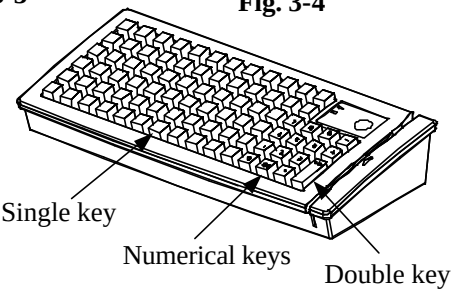


Fig. 3-6

IV. APPLICATION

A. KEYBOARD CONSTRUCTION

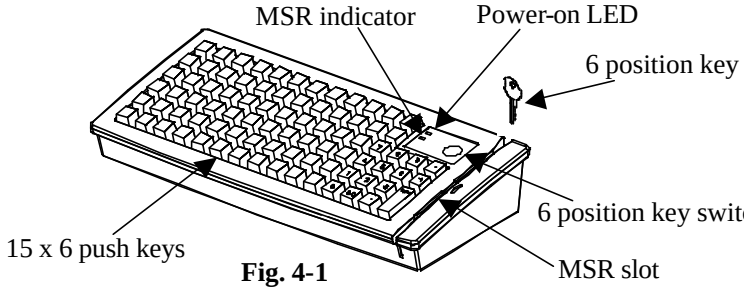


Fig. 4-1

This keyboard is constructed of three parts on the top surface (ref. Fig. 4-1). A 6 position turning key switch area is at the upper right corner, a 15 x 6 matrix of push key switches occupies most of the top surface and a slot near the right edge is designed for the Magnetic Stripe Reader of the -M2, -M2/3, -M3, -MJ models.

In the rectangular area at upper right corner there are one 6 position electronic key switch and two LED's. The upper LED is for power-on indicator and under power-on LED is the MSR indicator. The 6 position

electronic key can be turned to one of the following 6 positions: LP, L0, L1, L2, L3 and L4. It can only be taken out from the switch at positions L0 and L1. The purpose of this electronic key serves 3 folds: When the key is switched to (and extracted from) position L0, the whole keyboard output will be blocked off by hardware to work as a security measure. A programmable answer back code for the final position of the 6 position electronic key will be sent by the keyboard to the host computer whenever the key is switched to a new position for a programmable delay time or when the host computer sends a specific code (E7h) to inquire the keyboard. The position of the electronic key determines which page of the key content table for the 84 push keys applies, while the definitions of the same key within different pages can be programmed so absolutely independent to provide instant menu change over.

This turnable electronic key switch is delivered with a set of 4 pcs keys, each marked as "PRG", "REG", "Z" and "GT". The effective range of each of the 4 keys can be illustrated by the following table and drawing.

	PRG	REG	Z	GT
LP	Y	N	N	N
L0	Y	Y	Y	Y
L1	Y	Y	Y	Y
L2	Y	Y	Y	Y
L3	Y	N	Y	Y
L4	N	N	N	Y

B. MSR (Magnetic Stripe Reader)

The MSR slot is near the right edge of the Programmable Keyboard. The MSR indicator LED is located at the upper left corner of the block containing the electronic key. There are three choices of the reader types – ISO 1,2 or 2,3 dual tracks and ISO triple tracks types. For card reading, be sure to insert the card to the bottom with magnetic stripe of ISO card facing downward. The movement of an ISO card can be either inserting the card from the top surface at the upper end then sliding the card to the lower out of the slot, or sliding the card from the lower of the slot till it reaches the upper end of the slot (ref. Fig. 4-2). The MSR indicator will light up in green when the MSR is ready to read, blink during reading, and then give a green light if the reading is successful. The MSR indicator will turn to be red if the reading fails due to improper sliding or poor magnetic intensity of the magnetic stripe, the MSR indicator will then turn back to green when the MSR is again ready to read.

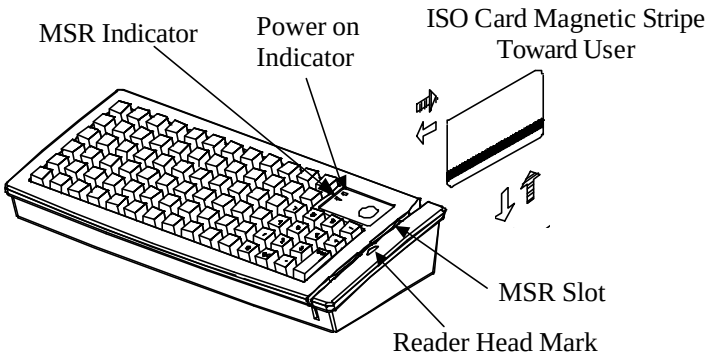


Fig. 4 - 2 Reading magnetic stripe cards of ISO standard

V. PROGRAMMING THE KEYBOARD

A. UTILITY INSTALLATION

There are in total three methods to program the programmable keys in KB6600 series keyboard: "RWM.EXE" the straightforward direct read/write programming utility under DOS or Windows DOS box; "KBM.EXE" the normal programming utility under DOS or Windows DOS box or "KBW.EXE" the normal programming utility under Windows and the "Hot key programming" capability.

In the attached product information CD, there is a file named "INSTALL.EXE" for installation of all the utilities into any operating system among Windows 98, and DOS. The user may install the programming utility by following the step by step instructions from this executable program. Both "KBM.EXE" and "RWM.EXE" will be installed after completion. Please select the right model when entering the "KBM.EXE" program. The user may refer to the information on our web site for a preview of this program.

A programming utility that is referred to as "KBW.EXE" in this manual is developed particularly for the Windows 98/NT/2000/XP environment. Please find in the utility product information CD or in folder \Drivers\KB\KB6600 of the CD and double click the "Setup" program to install the whole utility. After completion of the "Setup", there will be a program group "Posiflex Tools" in the program files. Clicking the program "Posiflex Programmable Keyboard" in this group will activate the KBW.EXE for the KB6600 series. Please select the right model when entering the program.

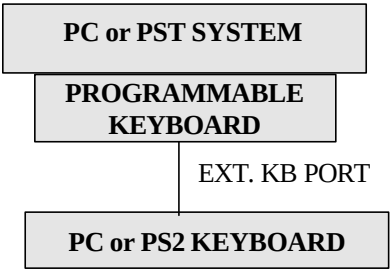


Fig. 5 - 1 Preparations

B. PROGRAMMING UTILITY (KBM.EXE)

1 QUICK REFERENCE GUIDE

Please refer to our web site for every detail in programming these programmable keyboards. The following simplified guide severs as a concise tool for instant application.

Keys To Program	How to Program Them
Esc, F1 - F12, Back Space, Shift, Ctrl, Alt, Insert, Delete, End, Page Up, Page Down, Print Scrn, Scroll Lock, Break, and all Arrow Functions	**Press:** (Alt-N), Esc, "Desired Key", Down Arrow
A - Z, 0 - 9, ~ ` ! @ # $ % ^ & * ( ) - _ = + } { [ ] | \ ' ; " : /. , < > ?	**Press:** Enter, "Desired Key or Keys", Down Arrow
Tab, Enter	**Press:** (Alt-N), "Desired Key", Down Arrow
Caps Lock	**Press:** Enter, (Alt-C), Down Arrow
Multishift	**Press:** (Alt-N), (Alt-M), Down Arrow - - - - Press (Alt-M) as many times as needed.
Seperator	**In Between Any Text, Press** (Alt-S)

2 HARDWARE LIMITATION

In case of "multiple combination key" application which means pressing three or more keys at the same time to obtain certain data output from the keyboard, there could be some limitations inherent from the nature of keyboard structure. The CPU of keyboard detects the contact between the "horizontal" and "vertical" lines for each key press, recognizes which key is pressed and sends correspondent data to the host computer. When there are many keys pressed at the same time, and the pattern of the contacts coincides with some special relationship, there are chances that the CPU of keyboard be confused about exactly which keys are pressed. The user may change the locations of the key-definition to prevent this once such confusion happens.

3 PROGRAMMING UTILITY (KBW.EXE)

This utility programs the programmable keyboard as KBM.EXE does but using Windows application interface. Please use on - line help to program the programmable keyboard. Use the connected PS/2 keyboard for data entry of usual characters. Use mouse right click or the " " key on keyboard for data input of some special codes.

4 SHORTCUT UTILITY (RWM.EXE)

The feature of this RWM.EXE is designed mainly for the off-line programming purpose and is very useful in quick reproduction of the preprogrammed contents of the programmable keyboard. In such application, the user should have either the preprogrammed keyboard or the preprogrammed file with ".tpl" extension name which is the result of the keyboard programming. The user may use RWM.EXE to directly transfer the programmed result of the programmable keyboard to a ".tpl" file or directly transfer a prestored ".tpl" file to a programmable keyboard without entering the utility "KBM.EXE" or "KBW.EXE" which may take more keystrokes. For instance, the user wants to transfer a file "XXX.tpl", which was saved before, to the programmable keyboard, he/she should type in following command in subdirectory "POSIFLEX.D":

RWM XXX.tpl (enter)

This operation is quite recommended to be performed on a daily basis to ensure the system stability.

On the other hand, when the user wants to save the contents of a programmed keyboard, e.g. when he/she newly receives a programmable keyboard, to a file named "YYY.tpl", he/she should type in following command in subdirectory "POSIFLEX.D":

RWM –r YYY.tpl (enter)

In this application, the user must be careful on the housekeeping of these template files and **never mix** such files with those originated from other programmable keyboard. In other words, transferring a file generated from other programmable keyboard to KB6600 series could mess up the data format inside KB6600 series, and vice versa.

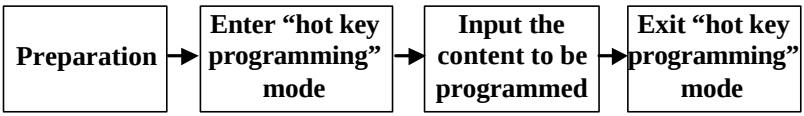
5 ANSWER BACK CODE

Programming the answer back codes of the 6 position electronic key-lock is also very easy as they are included in the keyboard programming with the locations coded as "KLP", "KL0", "KL1", "KL2", "KL3" and "KL4" in the key-layout map of page L1. These answer back codes will be issued by the programmable keyboard to PC whenever the 6 position electronic key is switched to a new position (there will be a time delay as determined in the configuration of the keyboard programming utility and is adjustable by "r" and "t" key presses, this time delay is useful to give only the answer back code of the last position of control key when it is turned across multiple positions) or when the keyboard receives an "enquiry" code (E7h) from the PC or the PST system. Here are some examples of sending this "enquiry" code in different languages:

Language	**Syntax**
C	outp (0x60, 0xE7)
BASIC	out &H60, &H0E7
DEBUG	o 60 E7

6 HOT KEY PROGRAMMING

The POSIFLEX programmable keyboard KB6600 series supports the "hot key programming" method which is most useful in instant modification of a few keys in a preprogrammed keyboard without entering the more sophisticated programming utility. Of course, the user may also use this feature to program through out all 84 keys by 5 pages (LP and L1 to L4) at will. The whole process of "Hot key programming" contains 4 steps for each key to be programmed and is illustrated as following:



a. Preparation

Please refer to Fig. 5 -1, a standard PC or PS-2 keyboard must be connected to the KB6600 series before entering "hot key programming" mode. The user shall then decide which key of which page is to be programmed and turn the 6 position control key to the proper position before entering the "hot key programming" mode. Please note that the answer back codes of the position control key is not covered by the "hot key programming" feature.

b. Enter "hot key programming" mode

To enter the "hot key programming" mode, the user must input the "hot key" and identify the key on the programmable keyboard to be programmed. The so called "hot key" is a special combination of keys pressed on the standard PC or PS-2 keyboard. In KB6600 series, the "hot key" is defined as pressing and holding the left "Alt" key while pressing the "PRT SC" ("Print Screen") key on the PC or PS-2 keyboard. And by doing so, the KB6600 will give 2 beeps to notify that it is ready to receive the identification of which key to be programmed. Right after the "hot key" is released, the user shall press the key to be programmed on the programmable keyboard once to identify which key to be programmed. If the "hot key" is pressed for the second time or the "Esc" key is pressed prior to the press of the key on the programmable keyboard, this mode will be aborted immediately. The user should not enter the "hot key programming" mode when the programmable keyboard is already fully loaded (no more free memory for further programming) by the key contents previously programmed.

c. Input the content to be programmed

Once the programmable keyboard enters the "hot key programming" mode with the key to be programmed identified, what the user types on the standard PC or PS-2 keyboard will be taken for the content to be programmed into that key of the programmable keyboard till the user exits the "hot key programming" mode.

The legal input in this mode includes all alphabetical letters (including both upper and lower cases), numerical digits (applicable only for keys at the area above the alphabetical keys and excluding those on the numerical keypad), symbols (such as `!"#$ and excluding those arithmetic signs in the numerical keypad) and the "Enter" key. The "Shift" key, the "Caps lock" key and the "Back space" key are also accepted in this mode to serve an editing purpose (for example, pressing "Back space" will erase the last character of the input instead of being treated as a character for input). Pressing the "Esc" key in this mode will abort the "hot key programming" mode immediately. All the rest keys (such as the "Ctrl", "Alt", "Home", any function key or arrow key or any key in the numerical keypad) on the standard PC or PS-2 keyboard are illegal

inputs in this mode. The maximum number of key presses acceptable to any key by “hot key programming” is 32.

All the input from the standard PC or PS-2 keyboard in this mode will also be sent to the host computer.

d. Exit “hot key programming” mode

After the intended content of the key is completely entered, the user shall press the “hot key” again to notify the end of “hot key programming”. The programmable keyboard will give one beep to signify the normal exit of the “hot key programming” mode. Should there be any illegal entry in the content of the key or any other improper operation during the programming, the programmable keyboard will give three beeps to signify the failure of “hot key programming” and the key content is not changed. If the user pressed the “Esc” key to abort “hot key programming”, the programmable keyboard will also give three beeps immediately as a response to signify the abort.

VI. SPECIFICATIONS

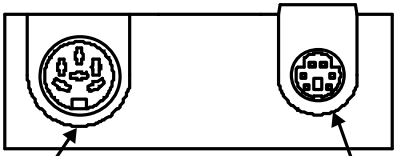
CONSTRUCTION:	Spill-proof, 84 keys + 6 position control key
LED COLOR:	Power on – Green MSR – Green & Red
KEY SWITCH TYPE:	membrane plus rubber dome
KEY STROKE TRAVEL:	3.2 mm
KEY TOP SIZE:	19 x 19 mm for normal keys (ivory)
PREPRINTED KEYS:	".", "00", "0" to "9"
KEY CAP:	19 x 19 mm transparent
PROGRAMMABILITY:	
METHOD:	Software programming under DOS, Win98, Win NT, Win 2000, Win XP embedded or Win XP Pro without TSR program
COVERAGE:	84 keys by 5 pages + one 6-position control key with answer back code
CODE TYPE:	ASCII or scan codes
LANGUAGE:	English or European, software configured
KEY-CONTENTS LENGTH:	1 - 255 byte(s)/key
MEMORY:	Non-volatile memory, 8KB
INTERCHARACTOR OUTPUT SPEED:	programmable 0 - 140 msec
TIME DELAY:	programmable 0 - 240 sec
MULTILEVEL:	8 levels max.
DOWN LOAD SPEED:	≤ 40 sec. For 8 KB
CONTROL KEY:	6 positions with programmable answer back code for each position

POSITION CONTROL KEY:

- 6 positions (LP, L0, L1, L2, L3, L4), key extractable at L0 and L1
- Hardware lock off all keyboard data output at L0 after transmitting answer back code if programmed
- Capable of giving programmable answer back code of each position on position change of the key
- Capable of giving programmable answer back code of each position on receiving a specific code (E7h) from host computer

OUTPUT INTERFACE:

- 6 pin DIN female connector: connect to host computer
- 6 pin mini DIN female connector: connect to input PS2 keyboard



Connects to PC through CCBLA-055-1

Connects to PS2 keyboard

MAGNETIC STRIPE READER:

- Decoder & interface Built in keyboard wedge interface
- Tracks.....1 & 2 (KB6600M2 for ISO7811) or
  2 & 3 (KB6600M2/3 for ISO7811) or
  1, 2 & 3 (KB6600M3 for ISO7811) or
  2 & rear (KB6600MJ for JIS X 6302)
- Start/end sentinels.....Can be disabled by hardware jumper

Reader specification

Applicable card type	ISO 7811	JIS X 6302
Card feed method	Manual	Manual
Card feed direction	Bi-direction	Uni-direction
Read / write function	Read only	Read only
Card feed speed	5 to 55 inches/sec.	100 ~ 1200 mm/sec.
Error rate	Less than 0.5%	Less than 0.1%

Card data format

Card standard	IATA	ABA	THRIFT	JIS I	JIS II
Track used	Track 1	Track 2	Track 3	Track 2	Rear side
Recording method	F2 M	F2 M	F2M	F2 M	F2 M
Recording density	210 BPI	75 BPI	210 BPI	75 BPI	210 BPI
Recording capacity characters / bits	79 / 7	40 / 5	107 / 5	40 / 5	72 / 7

POWER CONSUMPTION:

Voltage..... 5VDC±10%
Current..... 125 mA max. (Model KB6600)
150 mA max. (Models KB6600M2, KB6600M2/3, KB6600M3, KB6600MJ)

MECHANICAL:

Dimension in mm.....……346 mm x 210 mm x 57 mm
Dimension in inches.…. 13.6" x 8.3" x 2.2" (W x D x H)

ENVIRONMENTAL:

Operating temperature.....	0°C to + 50°C
Storage temperature.....	-20°C to + 70°C
Relative humidity.....	90%, non-condensing
Vibration.....	4G
Shock.....	40G

RELIABILITY INFORMATION:

Push key switch:..... 15,000,000 strokes min.
Memory:..... 100 years min.
MSR head life: ..... 500,000 passes min.

APPLICABLE CONFORMITY:

CE, FCC CLASS A